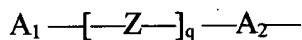
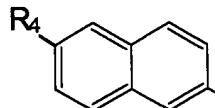


where the R_2 and R_3 groups are methyl, another lower alkyl group or an aryl or biaryl unit while the R_1 groups independently each are a hydroxyl, alkoxy, aryloxy, or arylalkoxy group, the R groups each represent a group as follows:

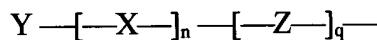


where A_1 is an aromatic group, an acyclic aliphatic group, or an alicyclic group, and A_1 can be a substituted or unsubstituted group, Z is a group selected from $-O-$, $-OCO-$, or $-S-$, and the coefficient q is 0 or 1. Z may also be $(CH_2)_nO$ where the coefficient n is 0 to 5 and the coefficient q is 1. A_2 is a bivalent radical of a naphthalene group, and the cyclic structure of A_2 , or A_1 if it is cyclic, optionally can be heterocyclic, such as by replacement of one or more CH member(s) of the ring structure with N, O and/or S. --

--19. The optically active compound of claim 18, where each R substituent is independently selected as:



where R_4 represents a group as follows:



where n is an integer value of 0 or 1 or more, X is $-CH=CH-CH_2-$, or $-(CH_2)_m-$ where m is an integer value of 1, 2, 3, or more, Y is a radical of an aromatic hydrocarbon, an acyclic aliphatic hydrocarbon, or an alicyclic hydrocarbon, and Y can be a substituted or unsubstituted group, and Z and q have the same respective meanings as defined in claim 18. --

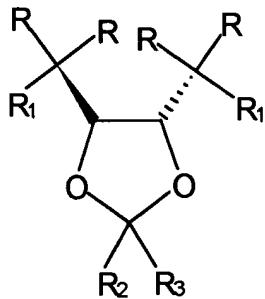
--20. The optically active compound of claim 19, where R_4 is an aryloxy radical, an

arylalkoxy radical, an arylalkyleneoxy, or an arylalkenyleneoxy radical.--

--21. (4R,5R)-2,2-dimethyl- $\alpha,\alpha,\alpha',\alpha'$ -tetrakis[6-(benzyloxy)naphth-2-yl]-1,3-dioxolane-4,5-dimethanol.--

--22. A liquid crystalline mixture, comprising:

a liquid-crystalline base having liquid crystalline properties;
at least one optically active compound of the formula:



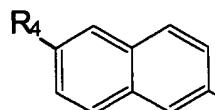
where the R₂ and R₃ groups are methyl, another lower alkyl group or an aryl or biaryl unit while the R₁ groups independently each are a hydroxyl, alkoxy, aryloxy, or arylalkoxy group, the R groups each represent a group as follows:



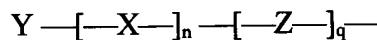
where A₁ is an aromatic group, an acyclic aliphatic group, or an alicyclic group, and A₁ can be a substituted or unsubstituted group, Z is a group selected from -O-, -OCO-, or -S-, and the coefficient q is 0 or 1. Z may also be (CH₂)_nO where the coefficient n is 0 to 5 and the coefficient q is 1. A₂ is a bivalent radical of a naphthalene group, and the cyclic structure of A₂, or A₁ if it is cyclic, optionally can be heterocyclic, such as by replacement of one or more CH member(s) of the ring structure with N, O and/or S. --

--23. The liquid crystalline mixture of claim 22, where each R substituent is independently

selected as:



where R₄ represents a group as follows:



where n is an integer value of 0 or 1 or more, X is -CH=CH-CH₂-, or -(CH₂)_m- where m is an integer value of 1, 2, 3, or more, Y is a radical of an aromatic hydrocarbon, an acyclic aliphatic hydrocarbon, or an alicyclic hydrocarbon, and Y can be a substituted or unsubstituted group, and Z and q have the same respective meanings as defined in claim 18.--

--24. The liquid crystalline mixture of claim 23, where R₄ is an aryloxy radical, an arylalkoxy radical, an arylalkyleneoxy, or an arylalkenyleneoxy radical.--

--25. The liquid crystalline mixture according to claim 22, further including an achiral non-liquid crystalline compound.--

--26. The liquid crystalline mixture according to claim 25, wherein the achiral non-liquid crystalline compound comprises R¹-C≡N, where R¹ represents an aliphatic group.--

--27. The liquid crystalline mixture according to claim 26, wherein R¹-C≡N comprises an alkynitrile.--

--28. The liquid crystalline mixture according to claim 26, wherein R¹-C≡N comprises undecanenitrile.--

--29. A liquid crystalline mixture, comprising:
a liquid-crystalline base having liquid crystalline properties;
at least one optically active compound of the formula (4R,5R)-2,2-dimethyl- $\alpha,\alpha,\alpha',\alpha'$ -tetrakis[6-(benzyloxy)naphth-2-yl]-1,3-dioxolane-4,5-dimethanol.--

--30. The liquid crystalline mixture according to claim 29, further including an achiral non-liquid crystalline compound.--

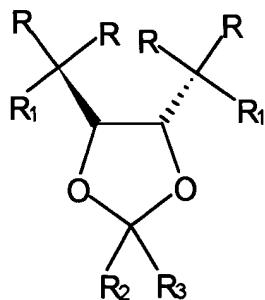
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--31. The liquid crystalline mixture according to claim 30, wherein the achiral non-liquid crystalline compound comprises $R^1-C\equiv N$, where R^1 represents an aliphatic group.--

--32. The liquid crystalline mixture according to claim 31, wherein $R^1-C\equiv N$ comprises an alkyl nitrile.--

--33. The liquid crystalline mixture according to claim 31, wherein $R^1-C\equiv N$ comprises undecanenitrile.--

--34. An electro-optical cell comprising a layer including a liquid crystalline mixture sandwiched between two substrate means, and means for applying an electric potential to the substrate means, wherein the liquid crystalline mixture comprises:

 a liquid-crystalline base having liquid crystalline properties;
 at least one optically active compound of the formula:



where the R_2 and R_3 groups are methyl, another lower alkyl group or an aryl or biaryl unit while the R_1 groups independently each are a hydroxyl, alkoxy, aryloxy, or arylalkoxy group, the R groups each represent a group as follows:



where A_1 is an aromatic group, an acyclic aliphatic group, or an alicyclic group, and A_1 can be a substituted or unsubstituted group, Z is a group selected from $-O-$, $-OCO-$, or $-S-$, and the coefficient q is 0 or 1. Z may also be $(CH_2)_nO$ where the coefficient n is 0 to 5 and the coefficient q is 1. A_2 is a bivalent radical of a naphthalene group, and the cyclic structure of A_2 , or A_1 if it is cyclic, optionally can be heterocyclic, such as by replacement of one or more CH member(s) of the ring structure with N, O and/or S.--

--35. A light modulating apparatus comprising an electro-optical cell according to claim 34.--

--36. The light modulating apparatus according to claim 35, wherein the light modulating apparatus comprises a cholesteric display.--

--37. An electro-optical cell comprising a layer including a liquid crystalline mixture sandwiched between two substrate means, and means for applying an electric potential to the substrate means, wherein the liquid crystalline mixture, comprises:

a liquid-crystalline base having liquid crystalline properties;

at least one optically active compound of the formula (4R,5R)-2,2-dimethyl- $\alpha,\alpha,\alpha',\alpha'$ -tetrakis[6-(benzyloxy)naphth-2-yl]-1,3-dioxolane-4,5-dimethanol.--

--38. A light modulating apparatus comprising an electro-optical cell according to claim 37.--

--39. The light modulating apparatus according to claim 38, wherein the light modulating apparatus comprises a cholesteric display.--

--40. An electro-optical cell comprising:

a layer comprising:

at least 70 weight percent (wt%) nematic host mixture; and

at least about 2 wt% (4R,5R)-2,2-dimethyl- $\alpha,\alpha,\alpha',\alpha'$ -tetrakis[6-(benzyloxy)naphth-2-yl]-1,3-dioxolane-4,5-dimethanol;

first and second substrates disposed above and below, respectively, the layer; and

first and second conductors physically coupled to the first and second substrates, respectively, which permit an electrical potential to be applied across the layer.--

--41. The electro-optical cell as recited in claim 40, wherein the layer further comprises about 2-6 wt% achiral material.--

--42. The electro-optical cell as recited in claim 40, wherein the layer further comprises a chiral material different from (4R,5R)-2,2-dimethyl- $\alpha,\alpha,\alpha',\alpha'$ -tetrakis[6-(benzyloxy)naphth-2-yl]-1,3-dioxolane-4,5-dimethanol and having an opposite twist sense.--

--43. A light modulating apparatus comprising an electro-optical cell according to claims 40.--